**3GPP TSG-RAN WG2 Meeting #119bis R2-22xxxx**

**e-Meeting, 10-19 October 2022**

**Source: Apple Inc**

**Title: [DRAFT] Summary of email discussion [AT119bis-e][013][NR17] NS Value Extension (Apple)**

**Document for: Decision**

**Agenda Item: 8.18**

# Introduction

This document provides a summary for the following email discussion.

* [AT119bis-e][013][NR18] NS Value Extension (Apple)

 Scope: Treat R2-2209344, R2-2209790, R2-2209791, R2-2210395. Determine agreeable parts, Based on agreeable parts, progress TP/Draft CR, LS out if agreeable.

 Intended outcome: Report, Endorsed TP/Draft CR, Approved LS out if applicable.

 Deadline: In time for CB W1 Fri

# Discussion

Companies providing input to this email discussion are requested to leave contact information below.

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| **Company** | **PoC** | **Email** |
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* 1. Discussion on the RAN4 LS

**Question 1:** Do companies have any comments on the RAN4 LS [1]?

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| **Company** | **Any comments/suggestions?** |
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* 1. Discussion on proposals

Two companies provided views [2] [4] on the extension of the NS values based on the RAN4 LS [1].

Both [2] and [4] suggest using value ‘7’ in legacy IE as an indicator to the extension and that ‘7’ should not point to any actual NS value in the legacy IE.

 **Question 2:** First, do companies agree with using extension IE to handle the additional values?

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| **Company** | **Agree**  | **Do not agree (pls provide alternatives in such a case)** | **Any comments/suggestions?** |
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[4] suggests using value range 8 to 39 with **5-bit IE**, while [2] proposes that RAN4 be provided with both options : **. 4-bit** IE enabling 8..23 extended NS range or **5-bit IE** enabling 8..39 extended NS range and get their feedback.

**Question 3:** If companies agree with Q2, what is your preference on the bitwidth for extension?

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| **Company** | value range 8 to 39 with **5-bit IE** | value range 8 to 23 with **4-bit IE** | **Ask RAN4** | **Any other suggestions?** |
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In [4] there is a suggestion to limit the extension to only dedicated signalling and not in SIB1?

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| The NS value (additionalSpectrumEmission) is conveyed to the UE * In SIB1 (can indicate multiple NS values in a cell)
	+ ServingCellConfigCommonSIB -> FrequencyInfoDL/UL-SIB -> MultiFrequencyBandListNR-SIB -> NR-MultiBandInfo -> NR-NS-PmaxList -> NR-NS-PmaxValue

*NR-NS-PmaxList* information element-- ASN1START-- TAG-NR-NS-PMAXLIST-STARTNR-NS-PmaxList ::= SEQUENCE (SIZE (1..maxNR-NS-Pmax)) OF NR-NS-PmaxValueNR-NS-PmaxValue ::= SEQUENCE { additionalPmax P-Max OPTIONAL, -- Need N additionalSpectrumEmission AdditionalSpectrumEmission}-- TAG-NR-NS-PMAXLIST-STOP-- ASN1STOPWe understand RAN4 do not require possibility to publish more NS values in SIB1, hence NR-NS-PmaxList need not be extended.Since there is less size concern with extensions in dedicated signalling, the additionalSpectrumEmission-v17xy is preferably added in the frequencyInfoUL |

 **Question 4:** Do companies agree to limit the extension to only dedicated signalling and not in SIB1?

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| **Company** | **Agree**  | **Do not agree**  | **Any comments/suggestions?** |
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Finally, there is a request from RAN4 on having this extension available from Rel-17.

 **Question 5:** Do companies agree on extension the IE from Rel-17?

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| **Company** | **Agree**  | **Do not agree**  | **Any comments/suggestions?** |
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* 1. Reply LS

In [3], there is a draft LS reply content. The rapporteur understands that the content would change based on the outcome of the above questions, but would like to check some views on the current text.

 **Question 6:** Do companies agree on a reply LS to RAN4 based on RAN2 progress?

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| **Company** | **Agree**  | **Do not agree**  | **Any comments/suggestions?** |
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 **Question 7:** Assuming ‘yes’ to Q6, can companies provide comments/suggestion to the current draft LS in [3]?

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| **Company** | **Any comments/suggestions?** |
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# Conclusion

To be filled

# References

[1] R2-2209344 LS on extending the maximum range for NS values

[2] R2-2209790 On extending the maximum range of NS values Apple

[3] R2-2209791 [Draft] LS reply on extending the maximum range for NS values Apple

[4] R2-2210395 Increasing NS value range Ericsson

# Annex: Main body of RAN4 LS [1]

To account for local or regional regulatory requirements of some bands, RAN WG4 has a framework with so-called NS values, where a particular NS value associated with a band can signal the corresponding emission requirements. At the moment the network can signal up to 8 different NS values. However, as recently identified by RAN WG4, for some bands intended for unlicensed operation there might be a need to signal more than 8 different values.

Based on that RAN WG4 kindly asks to extend the maximum range so that up to 32 different values can be used at least for bands intended for unlicensed operation.

And, RAN WG4 also asks whether it is possible to introduce the corresponding extension starting from Rel-17.

**2. Actions:**

**To RAN WG2 group.**

**ACTION:** RAN WG4 asks RAN WG2 to extend the maximum range of NS values – if possible, starting from Rel-17 – so that up to 32 different values can be used.